



## PATENT ABSTRACTS OF JAPAN

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(72) Inventor: **FUKUDA HIROSHI**(54) **ELECTRONIC DEVICE AND ITS MANUFACTURE**

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## (57) Abstract:

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**PURPOSE:** To enable the electronic device to be processed with high precision in the required dimension for the operation at a room temperature by a method wherein laminated layers including a semiconductor and insulating layer film is formed on a substrate to be oxidized from the rear side after the patterned processing step so as to form a linear quantum fine wire having a fine tunnel junction in the laminated layer.

**CONSTITUTION:** A laminated layer plate 29 is formed on an Si substrate 22 with a well 21 formed. Next, after the formation of a laminated layer plate 27 made of electron negative type resist film 30, a columnar resist pattern 31 is formed. Next, an underneath laminated layer film is dry-etched away using the resist pattern as a mask to form a columnar structure 32 of the laminated layer film. Later, the exposed parts of the columnar structure 32 and the Si substrate 32 are dry-oxidized to form a silicon oxide film 33. At this time, since the oxidizing rate is decelerated in proportion to the advancement of the oxidation, a silicon film line 34 can be self aligned on the central

